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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/736,110	12/13/2000	Peter Schwarz	WALL-002	3665
7590	01/05/2004		EXAMINER HARRINGTON, ALICIA M	
Raymond Sun 12420 Woodhall Way Tustin, CA 92782			ART UNIT 2873	PAPER NUMBER

DATE MAILED: 01/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/736,110	Applicant(s) SCHWARZ, PETER	
	Examiner Alicia M Harrington	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-28 and 30-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see remarks page 2, filed 9/2/03, with respect to the rejection(s) of claim(s) 1-8, 10-28, 30-37 under Wunderman in view of Blalock and Berends in view of Blalock have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Morgan (US 6,444,476).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8, 10, 12-15, 17-18, 22-28, 30, 33, 35, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wunderman (US 6,122,042) in view of Morgan (US 6,444,476).

Regarding claim 1-3 and 36, Wunderman discloses an apparatus for identifying properties of material comprising a first optical means (30; col. 5, lines 4-15; col. 6, lines 20-25); second optical means (#34; see figure 1a; col. 5, lines 15-20); a control and evaluation means (signal processor; col. 5, lines 29-34 and col. 17, lines 20-30); an output means (via leads to computer/display); where the illumination means comprises at least one light source that is a LED (col. 5, line 17) whereby light emitted by the illumination means is configured such that it

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spectral characteristic preferably comprises components of visible (col. 6, lines 23-30); whereby a filter means (col. 7, lines 25-30) is provided which is arranged in the path of radiation between the light source and photo sensor elements; and wherein the evaluation means evaluates said reflected light and derives at least color or fluorescence (col. 6, lines 20-35; col. 7, lines 25-30 col. 8, lines 35-45). Although, a filter was not placed between the LED light source and detector (gloss measurer), and Wunderman failed to specifically disclose an embodiment where the light source emits essentially uninterruptedly over the entire visible spectrum where at least the intensity of a light source is controllable. Although, LED which emit light are known to be intensity controlled and to have a band pass filter between them the detector, as taught by Morgan (see col. 4, lines 62-66 and col. 5, lines 1-21), since such control helps to keep the color output balanced and diodes are efficient, easily driven and low cost. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Wunderman, to provide a LED with intensity control, since measurement of surface spectral properties, such as gloss, fluorescence or color, rely on the intensity of a wavelength reflected from the object to determine their properties. And regulating the output intensity of the light impinging helps to better identify the spectral properties since the intensity is controlled/known. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a source of light that emits essentially uninterruptedly over the entire visible spectrum, since LEDs can produce spikes at particular wavelengths that causes the illumination of the object to be uneven, thus, detection of an excitation/fluorescence is not easily determined. Regarding claims 4-5, Wunderman discloses there are several characteristic values and parameters of the surface or substance (col. 8, lines 35-62 and 65-67).

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Regarding claim 6, Wunderman discloses the characteristic values are characteristic of the spectral reflectivity at one wavelength band each (col. 8, lines 35-62).

Regarding claim 7, Wunderman discloses the illumination means comprises a plurality of LEDs (col. 5, lines 16-20 and col. 6, lines 20-47).

Regarding claim 8, Wunderman discloses the LED's differ in spectral emission (col. 8, lines 9-15 and col. 9, lines 12-25).

Regarding claim 10, Wunderman discloses the light source is a plurality of LEDs (col. 6, lines 20-30 and col. 7, lines 10-35).

Regarding claim 12, Wunderman discloses the control means controls the measurements sequence so that at least one fluorescent parameter is determined (col. 7, lines 19-22 and col. 8, line 35-62).

Regarding claim 13 and 30, Wunderman discloses the first optical means is controllable to emit light simultaneously, intervals of times, successively (col. 8, lines 9-15 and col. 9, lines 10-45) to emit light in a specified range.

Regarding claim 14, Wunderman discloses the first optical means is controllable to emit light simultaneously, intervals of times, successively (col. 10, lines 14-44 and col. 11, lines 50-55).

Regarding claims 15-16, Wunderman discloses the first and second optical means is controlled to do measurements (for example: fluorescence) whether the LEDs all simultaneously or successively emitting. Wunderman states the control is based on a pattern (col. 8, line 14-17 and col. 10, lines 14-40) stored in the computer (memory). Although, Wunderman and Morgan fail to specifically disclose the claimed pattern. It would have been obvious to one of ordinary skill in the art at the time the invention was made that Wunderman system can be controlled to produce

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several measurement in several with different combination of light emission, since it clearly suggested by Wunderman and applicant has not disclosed how the claimed pattern solves any state problem. Thus, it lacks criticality.

Regarding claim 17-18, Wunderman discloses the detector is a CCD or equivalent, as disclosed in col. 7, lines 35-40 (see figure 2b).

Regarding claim 22, Wunderman discloses the filter (col. 7, lines 25-30) transmits only light characteristic of the filter and blocks all other wavelengths of impinging light.

Regarding claim 23, One of ordinary skill in the art knows a filter and detector spectral responses are typically based on a test sequence in which data derived from the detection of emission of the light source and subsequent detected emitted light is used to correct for deviation/fluctuations in signal during use of the system- official notice is taken to this fact. The derived data is compared against a standard. Thus, the selective blocking of the wavelengths by a filter is based on the calibrated system information. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the filter properties based on a predetermined standard for the type of light source, since the standard would provide a basis for calibrating the light properties emitted.

Regarding claim 24, in col. 6, lines 30-45, Wunderman teaches the output of the LED is linear the visible range.

Regarding claim 25, the spectral measurement characteristics is dependent upon the spectral characteristics of the LED lights radiated on the object and the spectral sensitivity of the photo detector (CCD) with filter, and where the stored data used to identify the objects is illustrated by the output spectral response of the light and detector, which yields a specific signature (spectral

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progression) of the object. Although, Wunderman and Morgan fail to specifically disclose the characteristics are proportional to the light standard and visual sensitivity of the human eyes, the human eyes are truly sensitive to the three primary colors of light. Those sensor and the eye rods allow humans to discern the many colors. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to produce a spectral characteristic that is proportional to the light standard and eye sensitivity, so that the measurement can be observed in some instances.

Regarding claim 26, again, the spectral measurement characteristics is dependent upon the spectral characteristics of the LED lights radiated on the object and the spectral sensitivity of the photo detector (CCD); thus, the stored data used to identify the objects is illustrated by the output spectral response of the light and detector, which yields a specific signature (spectral progression) of the object.

Regarding claim 27, in col. 7, lines 25-35, Wunderman teaches the filter(s) are forward the detector to transmit and block some of the light impinging.

Regarding claim 28, Wunderman disclose implanting the system with filters. However, Wunderman and Blalock fail to specifically disclose the filter is controllable to control the spectral properties. However, the uses of controllable (variable density or ND filters) forward a detector that detects multiple wavelengths of light is notoriously well known to the imaging art. Further, such implementation is known to help prevent unwanted signals from reaching the detector, as also taught by Wunderman (col. 7, lines 25-35). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made implement a controllable filter,

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since they are used forward detectors in the imaging art and since it allows the filter to be versatile (tuned to several wavelength) in a system which produces multiple measurements. Regarding claim 33, Wunderman fails to specifically disclose the angle of the first optical relative to the measurement surface and angle of the second optical means relative to the measurement surface are different. However, the Examiner takes official notice that optical measurement system are designed where the light is perpendicular to the measurement surface and the detector is at smaller angle relative to the measurement surface. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wunderman and Morgan system as claimed, since it's a well known optical measurement system design.

Regarding claim 35, Wunderman teaches a temperature measuring means in the proximity of the LED in an embodiment (col. 9, lines 5-11).

4. Claims 1-8, 10, 11, 17, 18, 31, 32, 34, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berends (US 5,377,000) in view of Morgan (US 6,444,476).

Regarding claims 1 and 36, Berends disclose a portable appearance (col. 1, lines 65-67; figure 5 and 13B) measuring apparatus (quality of a surface) comprising a first optical means (84 and 124 (in 248)); second optical means (#58 and 114; see figure 2 and 11); a control and evaluation means (#314; col. 8, lines 41-67; col. 10, line 30-50); an output means (via leads to computer/display); where the illumination means comprises at least one light source that is a LED (#124) whereby light emitted by the illumination means is configured such that its spectral characteristic preferably comprises components of visible (#84, col. 2, lines 35-40); whereby a

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filter means (222) is provided which is arranged in the path of radiation between the light source outputting the visible spectrum and photo sensor elements; and wherein the evaluation means evaluates said reflected light and derives therefrom at least color and/or gloss (col. 1, lines 65-67). Although, a filter was not placed between the LED light source and detector (gloss measurer), it would have been obvious to one of ordinary skill in the art at the time the invention was made to place a filter between the LED light source and photo detector to prevent/absorb unwanted light from reaching the detector. And Berends failed to specifically disclose an embodiment where the light source emits essentially uninterruptedly over the entire visible spectrum where at least the intensity of a light source is controllable. Although, LED which emit light are known to be intensity controlled and to have a band pass filter between them the detector, as taught by Morgan (see col. 4, lines 62-66 and col. 5, lines 1-21), since such control helps to keep the color output balanced and diodes are efficient, easily driven and low cost. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Berends, to provide a LED with intensity control, since measurement of surface spectral properties, such as gloss, fluorescence or color, rely on the intensity of a wavelength reflected from the object to determine their properties. And regulating the output intensity of the light impinging helps to better identify the spectral properties since the intensity is controlled/known. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a source of light that emits essentially uninterruptedly over the entire visible spectrum, since LEDs can produce spikes at particular wavelengths that causes the illumination of the object to be uneven, thus, detection of an excitation/fluorescence is not easily determined.

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Regarding claims 2-4, Berends discloses the device detects color and gloss (col. 2, lines 65-67).

Regarding claims 5-6, Berend discloses the color is determined by the 21 wavelength characteristics of the reflected light (col. 10, lines 30-45; col. 11, lines 35-40).

Regarding claim 7, Berends discloses the illumination means comprises an incandescent lamp and LED (see col. 2, lines 5-20 and 37-40).

Regarding claim 8, Berends discloses the LED controlled (col. 8, line 65-67) to generate green light only (col. 11, lines 60-67) and the incandescent light is a light source that generates light in the entire visible spectrum (col. 6, lines 5-15). However, it is well known in the art to implement an LED source controlled emit light in the entire visible spectrum and used for gloss measurements- the Examiner takes official notice to this fact. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the LED light source as source emitting across the visible spectrum since it is an inexpensive light source and it is well known in the art. Further, Morgan teaches controlling the intensity of the LED.

Regarding claim 10, as discussed above, Berends discloses the illumination means comprises an incandescent light and a single LED as the light source. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the illumination means with a plurality of LEDs since LED may be combined as light source and tuned to a desired wavelength band or wavelength range while having high light intensity at narrow bandwidths and it is an expensive light source to implement in optical measurement system. Further, Morgan teaches the LED can be controlled to produce light at desired wavelengths and intensities.

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Regarding claim 11, Berends discloses the incandescent light source is implemented, as discussed above in claim 1. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a halogen light source since it has been held to be within the general skill of a worker in the art to select a known material on its suitability for the intended uses as a matter of obvious design choice. In re Leshin, 125, USPQ 416.

Regarding claim 17 and 34, Berends discloses twenty-one photo sensor elements are provided (col. 6, line 15-20 and col. 7, lines 50-65 and col. 8, lines 9-25) to output signal to ascertain the optical parameters of the surface.

Regarding claim 18, Berends discloses two one photo sensing elements and larger area photodiode as its second optical means. Morgan discloses an area array CCD as claimed (see col. 10, lines 44-55). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Berends, as taught by Morgan, to detect the characteristics of surface using an area sensor, since it would provide an equivalent function of supplying data.

Regarding claim 31, Berends discloses a glass diffuser (90) and aperture means (96) are implemented as a part of the first optical means (col. 9, lines 40-50).

Regarding claim 32, Berends discloses the evaluation means uses an algorithm stored in memory to evaluate the measurements (col. 11, lines 30-50).

5. Claims 19-21 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berends (US 5,377,000) in view of Morgan (US 6,444,476), as applied above in claim 1, in view of Rioux (US 5,701,173).

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Regarding claim 19-20, Berends and Morgan fail to specifically disclose a spectral means as claimed. Although, it is well known in the art, as taught by Rioux.

In the same field of endeavor, Rioux disclose an optical system for measuring color and profiles of a surface where the detector is a CCD array (col. 4, lines 30-35) where a wedge shaped element splits the light into Red, Green and Blue (col. 4, lines 30-35). The system is designed such that the spectral means (36) is in the radiation path between the illumination means (12) and photo sensor (28). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Berends and Morgan, as taught by Rioux, since it is known in the measurement of color and profiles, and Rioux system generates less noise.

Regarding claim 21 and 37, Berends discloses two one photo sensing elements and larger area photodiode as it second optical means. Berends and Morgan fail to specifically disclose an area array CCD with light deflection as claimed. Although, it is well known in the art, as taught by Rioux.

In the same field of endeavor, Rioux disclose an optical system for measuring color and profiles of a surface where the detector is a CCD array (col. 4, lines 30-35 and 40-60) and light impinges upon the array in lines of Red, Green and Blue via a wedge. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Berends and Blalock, as taught by Rioux, since it is known in the measurement of color and profiles, and Rioux system generates less noise.

Conclusion

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M Harrington whose telephone number is 703 308 9295.

The examiner can normally be reached on Monday - Thursday 9:30-6:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 703 308 4883. The fax phone number for the organization where this application or proceeding is assigned is 703 872 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.



AMH

Alicia M Harrington
Examiner
Art Unit 2873



Scott J. Sugarman
Primary Examiner